The Northwestern MILLER
MILLING PRODUCTION SECTION

New Ventilation System For Bulk Cars Keeps Flour Dry in Transit

By F. W. Hayes
Vice President in Charge of Production, Russell-Miller Milling Co.

F. W. Hayes, vice president in charge of production for Russell-Miller Milling, who designed the ventilator and is the author of this article.

DURING the past six years, the shipment of bulk flour has increased tremendously. Along with this growth has been a comparable increase in problems which the milling industry has encountered in the loading and transport of bulk flours. The majority of the problems have arisen from wide temperature variations between the product and the container, both while loading and subsequently during transit.

Bulk flour is loaded from 75° to 85° F. while the airslide car may be any temperature from 40° below to 100° plus F. Flour is normally loaded at 14% moisture. If the temperature variations and humidity are such as to exceed the dew-point, the cold car surfaces act as a dehumidifier and the warm moist air is drawn to the car surface and condensation takes place. During loading, there is considerable turbulence and the flour dust which settles on the surface mixes with the condensate causing an accumulation on the walls and roof of the car. This accumulation adheres to the epoxy resin liner of the car and not only becames discolored but it is very difficult to remove when cleaning the interior. The scraping required to clean off this accumulation damages the car liners, and the car soon requires relining.

After the car is loaded and the hatch is sealed for shipment, all of the hot moist air is retained in the area above the flour load. The load settles in transit 18 to 20 in. In this settling, all that is released is the hot moist air which becomes more concentrated in the top of the car. During the daytime, when the sun is hot, it draws out additional moisture from the flour into the space above the load level. At night when the car surface cools, the hot moist air entrapped further continues to condense on the wall and roof above the load level. The condensation that occurs in transit produces one of two conditions—either the accumulation that was formed on the roof during loading is loosened and from vibration drops into the flour or if the temperature conditions are right, the whole accumulation becomes a glutenous mass and hangs from the ceiling or runs down the walls in wet paste-like form, either of which makes it difficult to deliver the flour to the baker in the condition it left the mill.

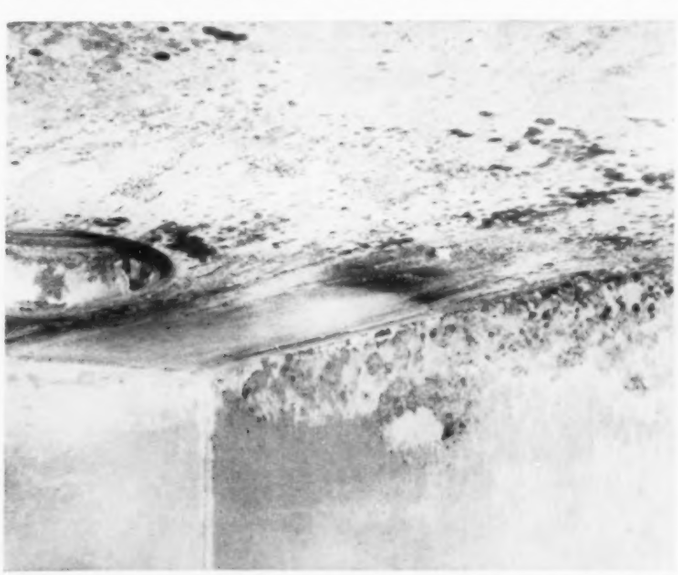
Greater Problem

An even greater problem that occurs during transit is the development of mold. If the temperature in the spring and fall of the year is ideal, this stagnant, hot, moist air entrapped in the top of the car is conducive to the development of mold spores. There have been instances where the entire surface of the load was completely covered with mold in just a few days in transit. Up to this time, the industry has had no solution that would guarantee the elimination of conditions which were conducive to the development of mold.

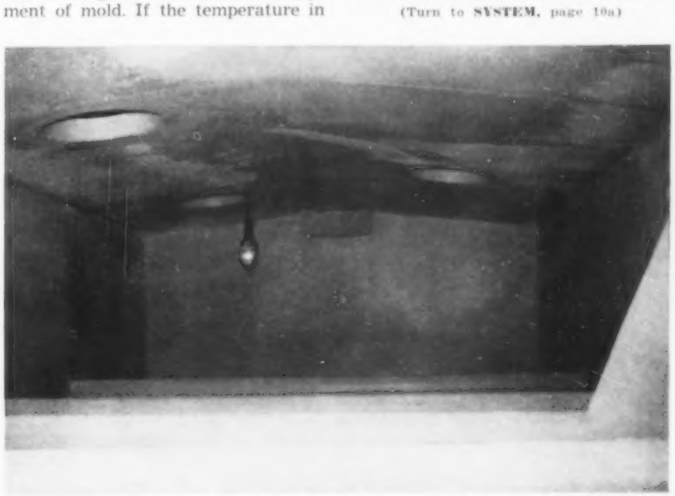
There are five major problems which plague the milling industry in the shipment of bulk flours:

1. By far, the most important is to be able to deliver flour to the baker in exactly the same condition as it left the mill.
2. The elimination of the possibility of mold formation is perhaps equally important if the flour is not to be rejected.
3. To eliminate condensation and the consequent accumulation of caked flour on the walls and roof of the car.

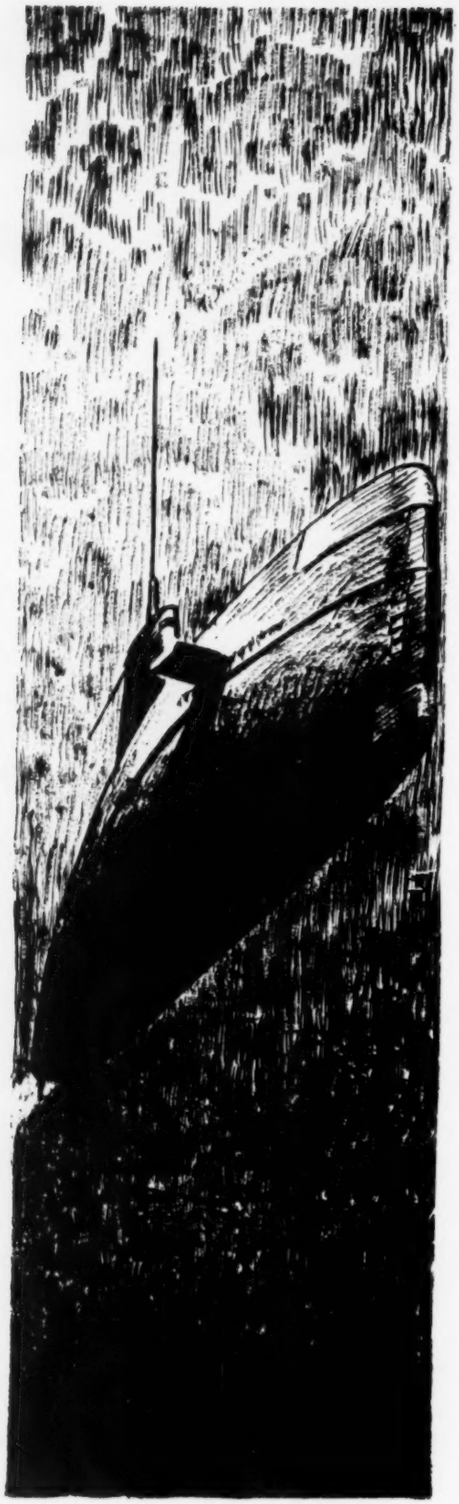
(Turn to SYSTEM, page 10a)



This photo is one illustration of the problems that can occur in the loading and transport of bulk flours. It shows the caked condition with considerable mold development on the roof of a railway car—a problem arising from the temperature variations between container and product.



Here is how the new ventilation system eliminates the problem. All flour remaining on the roof and walls can be brushed off as it has partially been done here.



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AT WORK WITH ASSOCIATION OF OPERATIVE MILLERS

THE Association of Operative Millers is organized in 14 districts with officers, serving in an honorary capacity, drawn from the mills and from the ranks of the allied trades. Every district holds meetings at regular intervals and hears papers on a variety of technical topics. Opportunities are provided to allow members to meet informally so that mutual problems can be aired and technical questions put to equipment suppliers.

●

Full-time executive vice president, Donald S. Eber, with headquarters at Kansas City, Mo., travels several thousand miles a year attending the meetings in the U.S. and Canada. He organizes, aided by members in the local districts, the annual technical conferences and trade shows.

●

District No. 8—the Niagara District—which includes mills in Buffalo and environs as well as in Eastern Canada is typical of the activity which goes on. Chairman this year is a Canadian, A. J. C. Willis, Ogilvie Flour Mills Co., Ltd., Montreal . . . the executive committeeman is a Canadian, too . . . Stuart Butler of the Maple Leaf Milling Co., Ltd., Toronto. Vice chairman is Clifford J. Batten, Russell-Miller Milling Co. from the U.S. side with fellow-countryman Roy F. Kehr, Kresselk Products, Inc., as secretary-treasurer.

●

District 8 exemplifies the international aspect of AOM. It also exemplifies the work which is done to improve methods and operations for the benefit of each individual firm . . . young men are encouraged to enter an annual essay contest, a procedure adopted by other districts in AOM with considerable success . . . prominent speakers come to the meetings.

●

AOM has three important committees continuously at work the year round—technical research, sanitation and educational. It works closely with the Millers National Federation and with technical organizations—government and private.

●

Officers are drawn from all parts of the U.S. and from Canada . . . from large mills, from medium mills and from small mills . . . Conference president is Richard C. Bradford, the Pillsbury Co., Minneapolis.

On this page are scenes at a typical Association of Operative Millers district meeting—in Buffalo.

Pictured on the right is Stuart Butler, Maple Leaf Milling Co., Ltd., Toronto, executive committeeman for the Niagara District. Evidently, he has posed a tricky technical question for James Tyler, who is with the Simon organization in Canada.

A happy threesome share a jovial moment in between sessions. They are, left to right, Arthur N. Hibbs, International Milling Co., district committeeman and a member of the national educational committee; Charles P. Dowd, Robin Hood Flour Mills Co., Ltd., and A. J. C. Willis, Ogilvie Flour Mills Co., Ltd., district chairman.

The wives of AOM members are active in the affairs of the organization, particularly in arranging events at the annual technical conferences and trade shows. Pictured at the right is Mrs. Arthur N. Hibbs whose husband is with International in Buffalo. Chatting with her is L. R. Patton, Sterwin Chemicals Inc., New York. In the background is Colin Quince, W. & T. Avery, Toronto.

A veteran miller—44 years in the business—stands behind his family. Harold O. Olsby, now with Standard Milling Co. in Buffalo, has seen service with Flour Mills of America and with the Russell-Miller Milling Co. Mrs. Olsby is on the right and on the left is their son Thane Olsby who is with Sterwin Chemicals Inc. in Kansas City.

A serious discussion finds Lyle Mertz, General Mills, Inc., Buffalo, and a former president of AOM, in consultation with J. M. Monier, products control manager, Buffalo flour division, GMI, center, and Linn Riggert, plant assistant, GMI, right.

Individual Motor Drives in Mills

By Harry L. Donovan

EDITOR'S NOTE: Mr. Donovan is executive vice president of Anaconda Industrial e Agricola de Cerais S.A., Sao Paulo, Brazil. The company operates mills at Sao Paulo and Curitiba. This report by him first appeared in Milling, the British technical journal.

MILLING is one of the oldest arts known to man, and milling technicians and millers are, in general, conservative people. They recognize that the importance of the industry to the world's population is such that any changes within it must be carefully considered.

Our responsibility under these circumstances is to insure that any change or improvement should be considered in its true relationship to current conditions, and I would particularly emphasize this. We should not fall into the fallacy of believing that what was good enough for our forefathers is necessarily good enough for us.

Individual motor drives are a very controversial subject, and as with most controversial subjects an open analytical approach will best determine its true value.

My own assessment of the advantage of individual drives compared with any disadvantages is based on experience gained in running a large individually driven 500-ton (125 sack) flour mill. This new mill was erected with the intention that all machines, including the roller mills, would be individually driven. At the time of its erection in 1952-53 it was the first known mill to have individual drives in all departments. Since that date at least one other big mill has been erected incorporating the experience gained, and using the same ideas by the same manufacturer, Thomas Robinson & Son, Ltd.

To enable the reader conveniently to assess the facts on which my conclusions are based, I have summarized these under the headings I consider most suitable, as follows:

Planning

The spacing and placing of machines in the past has always been governed by the transmission system employed. The use of individual drives means that machines can be

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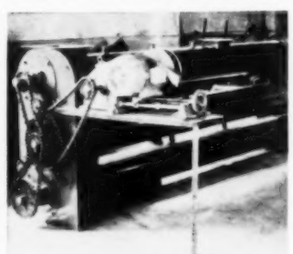
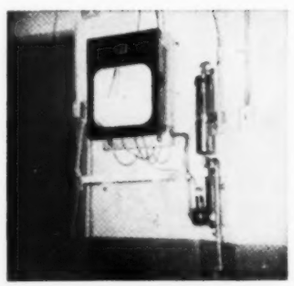


A complete unit, consisting of Tempering machine, drive, instruments, cooling tower, fan and motor can be purchased for as low as $5,700 for a capacity of approximately 300-400 bu./hr.



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DCA FOOD INDUSTRIES

▲ Arthur W. Gust, of DCA Food Industries, shown with the recently installed 27" Entoleter Impact Mill that has increased DCA's capacity and lowered costs.

◀ Marvin D. Jackson, Milling Supt., D.C.A. Industries, Baltimore, Md.

DCA FOOD INDUSTRIES SOLVES A PROBLEM

DCA needed to increase capacity but did not have the floor space available for the usual roller mill. Marvin D. Jackson, Milling Superintendent for DCA Food Industries of Baltimore, says, "Our problem was solved very effectively and inexpensively with the new Entoleter Impact Mills and, as a bonus, our product has better uniformity and a finer texture."

Here are a few advantages of the Entoleter Impact Mill over the usual roller mill:

1. Requires only 40% of the space (can be overhead mounted).
2. Provides 75% greater capacity at the same HP.
3. Costs 30% less.
4. Needs much less maintenance (lower operating cost).

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installed at the most convenient points consistent with the best possible utilization of building space. The consequent saving in building costs is an increasingly important factor with the high prices existing today.

Motors are infinitely more adaptable than line shafting in meeting the current trend for machines to run at higher speeds, and variable speed drives are more easily adapted. The complications caused by major differences in the speeds of machines mounted on the same floor are also avoided, and special purpose machines with special load characteristics are more easily accommodated.

Line shafts further restrict the construction of the building itself, and particularly the use of advanced reinforced concrete techniques, by reason of "shaft whip." This necessitates the recommendation that bearings should be no more than 8 ft. apart, which is again a restriction on the placing of machinery.

It will be readily seen that the greater flexibility in layout permitted by individual motors allows much more space and facility to plan spouting and pneumatic lifts. A big advantage and economy in construction is that 10 ft. beam centers can be used. After installation, machines can be easily moved to new positions if the need arises, and quarter twists and gear driving are abolished.

Capital Costs

The difference in initial capital cost is not so great as is sometimes thought, as will be seen from the tremendous amount of line shafting required for a mill, plus all hangers and belting of various lengths and size, not to mention the cost of erection. An approximate calculation shows that the additional initial capital cost of individual drives is compensated on maintenance costs of belting, oil, bearings, labor, etc., in three to four years, and from there on the individual drive mill is gaining all the time.

In addition to the saving in building costs made possible by the use of bigger beam centers already mentioned, the use of individual motors coupled with direct lift pneumatic roller mills does away with the need for a basement, thus saving a complete floor.

Operational Costs

There is a general tendency to under-estimate frictional transmission loss in a mill. Since this has been calculated at between 5 and 10%, however, it assumes greater importance in relation to the present high cost of power, particularly in a large plant. A check on the level of line shafting every six or 12 months would surprise most millers.

A much more positive drive and reduced friction, compared with flat belts and transmissions is possible with individual motors as the V rope type endless drive can be used. Much shorter centers can be employed and, in certain cases, direct drives, eliminating the maintenance cost of belting which can be considerable in a large mill.

Finally, the breakdown of one motor in an individual mill does not result in a complete shut-down as would be the case where a single motor, or a motor per floor, is employed. Our own policy is to standardize our motors to certain horsepowers. For the 330 motors employed a reserve of 10 different types of spare motor is maintained, varying from ½ h.p. to the 60 h.p. motor which drives the pneumatic fans.

Operational Convenience

Although a change of motor can in most cases be accomplished in no more time than is taken to repair a roller mill belt, my own experience is that motors have to be changed very rarely. On the other hand, transmission belts in the mill can, and do, break quite often.

Where machines do not run the full 24 hours, individual drives are an obvious economy. Control is easier since there are no belts to remove.

In the field of safety there are outstanding advantages in doing away with cumbersome line shafting, dangerous pulleys and fast running belts.

Power

The power factor and the economical use of power are points of accepted importance. It is sometimes pointed out that with individual drives it is possible that the need to allow a tolerance of power on certain machines due to variations in wheat, etc., may result in a drop in the power factor if this is not closely watched. Today, however, due to the different types of capacitators available, it is quite easy to compensate for the above tolerance by putting these machines at the proper points in the electrical circuit.

Our own experience is that we use less power per ton of wheat ground than does the equivalent sized transmission type mill.

Application

The technical application of the advantages set out above, from the miller's point of view, is best described in relation to the various mill departments.

SILO

I regard individual drives as essential for this department for the following reasons:

1. Since there are normally only

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New Edition

AMERICA LIKES BREAKFAST FOODS

Let no one doubt the popularity of breakfast cereals among Americans. The chart below traces the consumption of these fine foods between 1950 and 1955. During that period annual consumption rose by *76,000 tons*. In just one year, 1955, Americans ate 2½ lbs. of hot and 4.8 lbs. of cold cereals per person!

Why are breakfast cereals so well-liked? They are tasty; they are easily served; they appeal to busy homemakers, as well as institutional dietitians, because they are readily available in a variety of flavors at a modest cost. They add interest and value to an important but sometimes neglected meal—breakfast. Their use is extending to between-meal and party snacks, too.

Many grains are processed to make breakfast cereals: wheat, corn, oats, rice. Eaten with fruit and milk or light cream, they contribute an excellent combination of basic, flavorful, nutritious foods to the diet.

Better Foods for Better Health Through Restoration

The science of nutrition has advanced rapidly. In the manufacturing process of some cereals, some of the essential "B" vitamins and minerals are subject to some loss, just as with other foods. These losses are inescapable when such grains are prepared for human use. When this became known, manufacturers acted to overcome the losses. They adopted restoration.

Restoration simply means that certain important vitamins and minerals are restored to the cereal food during processing, so that the vitamin and mineral values in the finished product are generally equal to the whole grain values of those elements. Wheat, corn and rice products are customarily so treated. Vitamins B_1 (thiamine), B_2 (riboflavin), niacin (another "B" vitamin), and the mineral, iron, are those most widely restored. Vitamins C and D are also sometimes added.

Pre-sweetened cold cereals emphasize the nutritional importance of added vitamins. Increased calories require more "B" vitamins for best utilization of the food.

Why the Vitamins are Important

Physicians and diet experts have proved that vitamins are essential to prevent certain deficiency diseases and to contribute to robust good health.

Vitamin B_1 (thiamine) helps build and maintain physical and mental health. It is essential for normal appetite, intestinal activity, and sound nerves. A lack of this vitamin leads to beriberi, a rarity in the U. S. A., but still a very serious health problem in other parts of the world.

Vitamin B_2 (riboflavin) is essential for growth. It helps to keep body tissues healthy and to maintain proper function of the eyes.

Niacin is needed for healthy body tissues. Its use in the American diet has been largely responsible for the virtual disappearance of pellagra, a serious disease.

Vitamin D helps children develop normal teeth and bones. It prevents the development of certain abnormal bone conditions in adults.

Iron is essential for making good red blood and for the prevention of nutritional anemia.

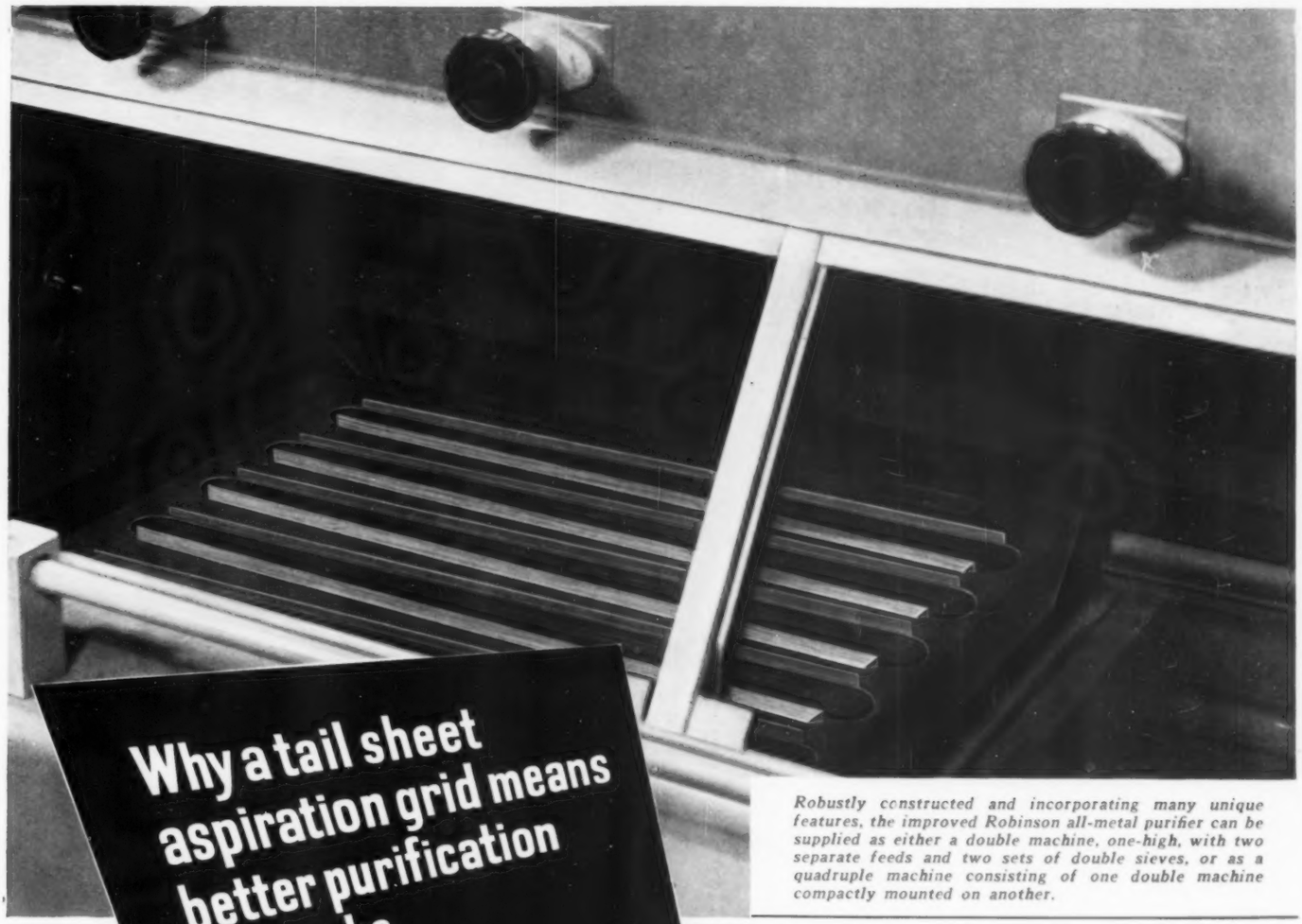
Where Do the Vitamins Come From?

At about the same time that processing losses in breakfast cereals became known, other developments in the scientific world made available ample supplies of vitamins at economical prices. Thus, the nutritional contribution of some breakfast cereals could be, and was, greatly improved through restoration.

Since the early days of breakfast food restoration and of white flour and white bread enrichment, the world-famous firm of Hoffmann-La Roche has supplied top quality vitamins *by the tons*. Pioneering work in its laboratories and by its collaborators resulted in the "duplication" of some of nature's extremely complex substances. First, the chemical composition of the vitamin was learned. Second, the pure substance was isolated. Third, the "duplicate" was made by synthesis. And fourth, the laboratory techniques were extended to large scale commercial operations.

The manufactured "duplicate" is identical chemically and in biological activity with nature's own product. A vitamin is still a vitamin regardless of whether nature or man made it. So efficient is large-scale manufacturing, that vitamins are sold at a lower cost than if they were extracted from natural sources.

This article is one of a series devoted to the story of vitamin enriched or restored cereal products: white flour, white bread and rolls, corn meal and grits, macaroni products, white rice, breakfast cereals, farina. Reprints of this article, of any other in the series, or of all are available without charge. Please send your request to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, P. Q.



Why a tail sheet aspiration grid means better purification of stocks

Robustly constructed and incorporating many unique features, the improved Robinson all-metal purifier can be supplied as either a double machine, one-high, with two separate feeds and two sets of double sieves, or as a quadruple machine consisting of one double machine compactly mounted on another.

When stock passing down a purifier sieve reaches the tail sheet the quantity is normally insufficent to cover the sieve and thus ensure an even distribution of the air passing through. Since the air always takes the easiest course it will pass through the bare patches on the cover and avoid the stock.

The result is either the overtailing of good stock, the contamination of throughs with branny matter, or a combination of both.

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- Double layers of 18 in. (457 mm.) wide sieves increase capacity.
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- Twin shaking conveyors dispense with worm conveying. Self-cleaning eliminates infestation.
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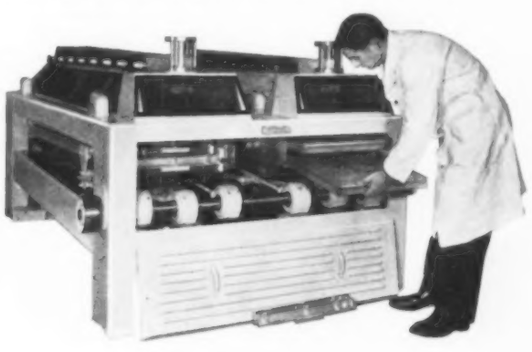

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one or two machines on each floor, line shafting has no advantage, and the individual drive is the only answer.

2. Machines in the silo do not run on a 24-hour schedule as mill machines, and also run separately and at different times. The on-the-spot, easily controlled power provided by individual drives is an obvious advantage.

SCREENROOM

1. The high speeds at which many machines in this department, such as fans, scourers, brushes, etc., are required to run, definitely call for individual drives.

2. Item 1 under the heading "Silo" applies equally here.

3. Individual drives enable much greater control and facilities for easier running. Control panels for stopping and starting can be utilized, and, even more important, automatic control between cleaning and finishing plants is possible.

THE MILL

It is in connection with roller mills that the main controversy regarding individual drives usually arises. My own company operates one mill with individual drives and two mills driven by line shafting. Our view, in the light of this experience, is that the advantages of individual drives for roller mills are quite outstanding. We base this conclusion on the following points:

1. Pneumatic systems which are designed in conjunction with roller mills which give direct lift of stock through the machine have done away with the need for a basement, so long as individual drives are employed.

2. Motors can be allocated according to the precise power required for each machine. Where it is necessary to allow a leeway due to the milling of different wheats, etc., which some countries require, power capacitators compensate very easily for this.

3. Belt transmission troubles, usually the most troublesome feature in mill maintenance, are done away with, and roller mill line shafting, the most dangerous feature, is abolished.

4. The enormous saving in time and trouble made possible by push button control (which stops the roller mill and does not merely disengage it) has to be experienced for full appreciation.

5. Much greater control is possible with individual motors. It is possible with amperometers on each motor to know exactly what power every individual roller mill is taking and this can help tremendously in keeping control of the grind of the rolls.

PURIFIERS

1. These machines require very little power, and the floor-length shaft normally used to drive them is a most uneconomical form of drive.

2. The small motors required for individual purifier drives can be neatly mounted inside the machine, saving valuable space.

3. From a constructional point of view, the 8 ft. beam span already referred to is not economical of space for a series of purifiers.

SIFTERS

1. Sifters should run at their maximum speed in the shortest possible time after starting, especially if the mill has been shut down under load. The maximum speed is reached much more quickly with individual motors.

2. Sifters can be driven from overhead vertical slung motors, doing away with quarter twist drives and gears, which are always a source of trouble and a waste of power. Space is saved and transmission losses cut.

FANS

In the majority of mills today, even where transmission is employed, fans are usually individually driven for the following reasons:

1. High speed.

2. Require specialized starting due to large horsepower.

3. Often placed on the top floor of the mill where space positioning is difficult.

WAREHOUSE AND PACKING

The arguments quoted for the silos and screenroom apply here, i.e., few machines on each floor, spasmodic running, utilization of space, etc. Line shafting is not economical.

Conclusion

It will be seen that the advantages of individual drives greatly outweigh the disadvantages, and that even the disadvantages can be compensated. My own opinion, based on 25 years' experience in milling, supervising, planning, erecting and running various types of mills, including my company's present mills driven both by transmissions and individual drives, is that there is no comparison between the two forms of driving. In addition to the all-important economies in these days of high costs, the pleasure it is for a miller to have all individual drives is something one has to experience.

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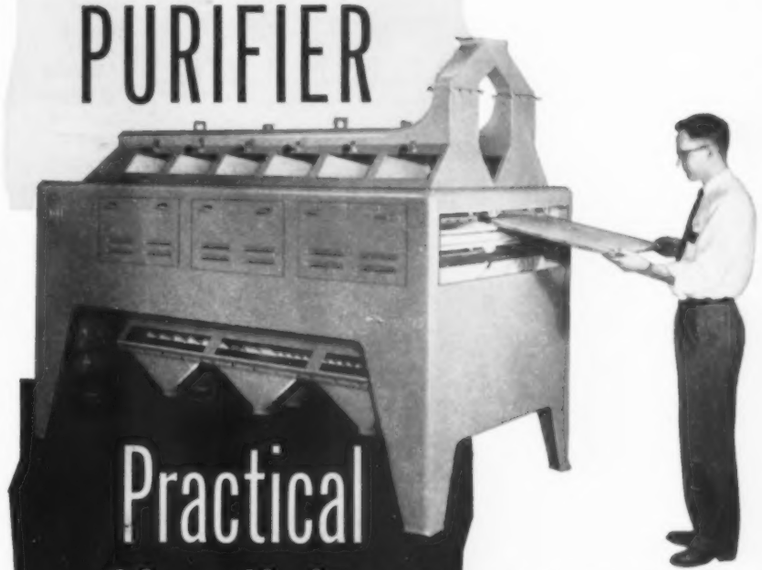
AUSTINVILLE, IOWA — Fire of undetermined origin destroyed the Austinville Grain Elevator & Feed House recently. Damage was estimated at about $100,000.

all new
all metal
twin deck

PURIFIER



Plan to stay ahead... MODERNIZE!

Practical Simplicity

Unit available with integrated 1 hp motor or equipped for line shaft operation.

Practically eliminates maintenance
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The practical simplicity of the new Allis-Chalmers purifier obsoletes even the newest of the so-called modern machines. There are no gingerbread gadgets — no multiple drive shafts — no counterweights — no vibrating feeder to cause maintenance headaches. And you'll be pleased with the elimination of infestation-harboring dead spots — *inside* and *out* — with the clean-cut design of this all new, all metal purifier.

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Twin over and under, match weight screen decks provide greater capacity. Individual air controls — full length of decks — distribute the desired volume of air to each mesh for maximum separation efficiency. An important optional feature — machine may be split to permit running two separate mill stocks.

For complete information, *see your nearby A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.*

Modernize with the
A-C pneumatic handling system

As a result of a close working relationship with the milling industry, Allis-Chalmers pneumatic system is pre-engineered with your modernization problems in mind. Write for the complete story.

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A-5996

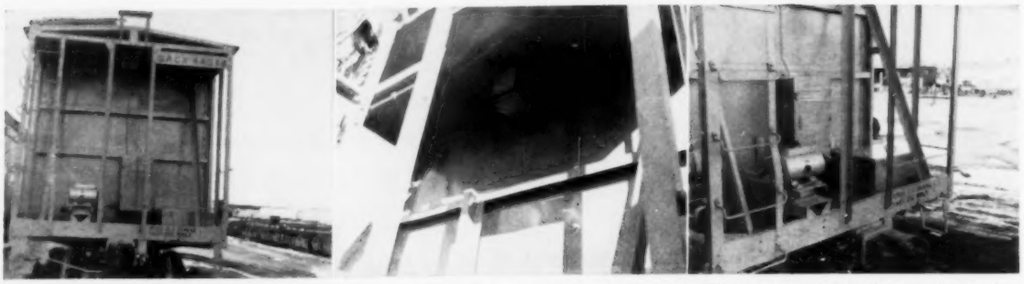
SYSTEM

(Continued from page 1a)

4. To reduce the excessive cleaning costs when the car is returned for reloading.

5. To eliminate those conditions which result in the need for expensive relining of cars.

The industry has tried all sorts of experimentation to eliminate these problems. Most of the efforts have been limited to various methods of loading:



Left, car with ventilator installed by Great Northern Railway Co. Center, the intake duct with snow baffle on bottom. Right, a closer view of the alternator and the rectifier and relay box furnished by Safety Electrical Equipment Corp. for the system.

● Pneumatic loading which undoubtedly adds to our problems by the use of air under pressure.

● Gravity loading as fast as possible so that condensation would have the least possible chance of occurring during loading.

● Heating the interior of the car by the use of forced warm air being drawn through the car for some period of time prior to loading.

● Heating the outer surface of the car by the use of large electrical blankets over the top of the car.

● Using approved types of mold inhibitors to try to prevent the development of mold.

● Equip each hatch with 5 to 10 lb. of various types of desiccant to attempt to absorb some of the free moisture above the flour load.

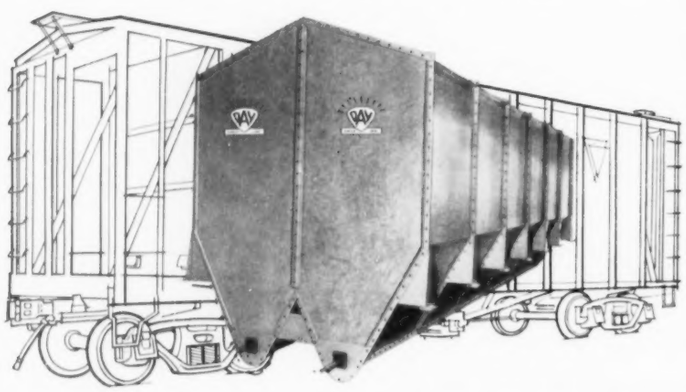
● To wash the interior of cars during those few months when weather permits in order to save the car liners.

Considerable expense in research has been spent by the industry in these applications, and yet the industry still faces the same problems that it did originally.

The solution to these problems is two-fold: First, it is imperative that the car be kept dry at all times during the loading. Several of the companies are at present experimenting with various methods of suction on the car while being loaded. This helps

DAY

BULK STORAGE NEWS



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Here's a "package" that's engineered and built for heavy duty service. Compared to bags or other containers, DAY Bulk Tanks store more materials, in less space, faster, better and cheaper. By eliminating bag and labor costs they save up to 35¢ on every 100 lbs. of bulk material handled.

DAY tanks are large enough to actually store a carload or more of material in a single tank. They may be pneumatically or mechanically loaded and emptied. Made in vertical and horizontal styles, DAY tanks are built and shipped in easily erected sections. They have been proven in a wide range of applications. They are sturdily constructed of galvanized, black or stainless steels or aluminum.

Write toDAY for Bulletin 574. This 12-page booklet gives specifications plus money saving facts about sanitary, weatherproof DAY tanks.

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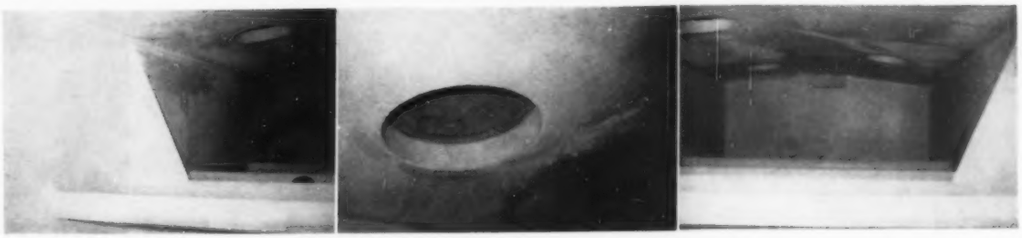

Left, an illustration of how, with the ventilation system, the flour remaining in the car comes down merely by brushing it. Center, the dry flake around the port will also come down with brushing. Right, the opposite end of the car which is in the same condition. Instead of any caking in the car there is just a dust film when the ventilation system is used.

es allowing the outside air to be drawn through them and suction of at least 3,000 c.f.m. is applied on preferably two of the other hatches, most all of the moisture-laden air introduced can be drawn off. It is recommended that the flour stream when loaded be directed toward the incoming air at all times. This helps to break up the flour stream and prevents drawing off through suction any excessive amounts of flour. If this car can be kept dry in loading, then the problem is keeping the interior of the car dry until it reaches the bakery, and it is equally important that it be kept dry on the return trip to the mill.

Last year, Russell-Miller Milling Co. made a disclosure to various production men in the milling industry of a new filtered air ventilator for which it had applied for patent. This was the first real attempt to solve the problems that occur in the transportation of bulk flour. I (F. W. Hayes, vice president in charge of production for Russell-Miller) designed the ventilator and supervised the installation of the prototype which has been in operation for sometime.

System Described

In principle, the ventilator is equipped with a fan which pulls through the car 500 c.f.m. of filtered air. An intake vent is installed at the top of the brake end of the car which is equipped with a special Farr filter and is protected by a snow baffle. On the opposite end of the car a similar hood is installed in which is mounted a 9 in. fan for expelling the air. Inside of the car at each end there are baffles which direct the intake and the exhaust of the air toward the walls and roof of the car so that the full area above the flour level is changed. The fan is powered by a generation system which is furnished by the Safety Electrical Equipment Corp. of New Haven, Conn. The generator charges a 25-cell nickle cadmium alkaline battery furnished by the Thomas A. Edison Industries of West Orange, N.J. The fan operates on the battery at all times when the car is on siding and is picked up by the generator in transit. When the car is first loaded and trimmed, the fan will replace the complete air in the top of the car twice every minute. By the time settling has occurred in transit, it will replace the air once every one and one-half minutes. The fan operates from the time the hatches are sealed at the mill until the car arrives at the bakery and the fan is

An illustration of how dust can be cleaned from around the port completely by brushing it with the hand.

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An IPI Recovery System provides a practical—and profitable—method of recovering wheat-wash water solids. These solids are a marketable feed supplement, with a protein and fat content comparable to mill-run or mill-feed. Operational tests prove that in eight days—or less—mills recover the equivalent weight of one hour's grind (a minimum of ½%).

Eliminates Sewage Problems

Removing solids from the washer water drastically reduces the cost of sewage disposal. When an optional second stage (water recovery) is added, *total sewage volume* is generally reduced by as much as 90% or more.

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The use of the optional second stage of an IPI Recovery System enables mills to recover wheat wash water for re-use —and results in saving up to 90% of city water volume.

Your mill can recover *extra* profits—and solve sewage and water problems — too. You may have any additional information you wish, without obligation.

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to remove moisture-laden air introduced into the car during loading. If a system is utilized whereby breathers are installed on two of the hatch again turned on as the car leaves the bakery and runs continuously to keep the empty car dry until it again returns to the mill. Both the intake and exhaust ducts are equipped with blanks which replace the filter during loading and unloading and also seal the car for use of any other products where the ventilation system is not required.

This ventilation system will keep the car perfectly dry in transit. It is not the sole solution to the industry problem as the effectiveness of the ventilator for the end results is dependent also upon a satisfactory method of loading that will keep the entire car surface dry during loading. If such a method is used, the ventilator will assure that the car and product will be kept in excellent condition after they leave the mill.

The following things have been accomplished in the tests of the prototype unit to date:

1. Russell-Miller has been able to deliver flour to the bakery in exactly the same condition as it came off the mill.
2. With the constant circulation of fresh air through the car the ventilator has absolutely eliminated the possibility of mold formation.
3. With an adequate suction on the loading system, the ventilator has eliminated any condensation in transit.
4. By eliminating condensation and keeping the car dry, the cleaning time on each trip has been reduced 85% of the average experience of the industry.
5. Since scraping the interior is no longer necessary it has eliminated the need for expensive car relining.

This view shows the caking of flour that occurs during loading.

Russell-Miller feels confident from the tests made to date that if airslide cars are equipped with this bulk flour ventilator and if the mill has an effective loading system, that the industry will have licked its bulk flour transport problems.

The bulk flour ventilator will not be available until early fall, but at that time it will be manufactured and leased exclusively by Hayes Industries, Box 2018, Commerce Station, Minneapolis 15, Minn.

—BREAD IS THE STAFF OF LIFE—

Hurley Fellows, 67, USDA Pathologist, Dies in Kansas

MANHATTAN, KANSAS—Hurley Fellows, 67, a U.S. Department of Agriculture plant pathologist, died at his home here recently.

Mr. Fellows originally joined the USDA at the University of Wisconsin but had been stationed in the Kansas State University department of botany and plant pathology since 1925.

He worked for many years on the root rot and foot rot disease in wheat, and the Septoria leaf blotch of wheat, but for the past 10 years had devoted his efforts to wheat streak and soil borne mosaic studies.

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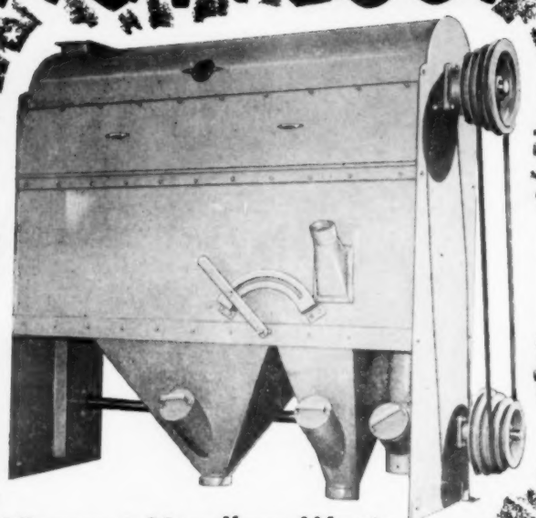

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Harold Wies

Quaker Oats Names Maintenance Manager

CHICAGO — The appointment of Harold Wies as manager of maintenance operations for the Quaker Oats Co. has been announced by L. W. Michael, chief engineer. Mr. Wies will move his headquarters to Oregon, Ill., where he will manage the company central shop as one of the functions of his new position.

Mr. Wies joined Quaker in 1917 as an employee of the packaging department in Cedar Rapids, Iowa, later serving as chief engineer at Cedar Rapids, Grand Island, Neb., and Memphis, Tenn., before moving to the Akron, Ohio, plant as superintendent. He was transferred to the company headquarters office in Chicago in 1953 as head of the construction division of the engineering and planning department, and was made assistant chief engineer in 1955.

—BREAD IS THE STAFF OF LIFE—

Wheat Holds Quality Well

Wheat stored for periods up to 33 years in U.S. Department of Agriculture-state tests made fair to good bread, with thiamine and protein content comparable to that of freshly harvested wheat.

C. C. Fifield, Agricultural Research Service baking technologist, and agronomist D. W. Robertson, of the Colorado Agricultural Experiment Station, found that quality of bread recently made from most of the stored wheat samples was the same as for bread made in earlier tests. In a few cases, loaves from old wheat did not rise as much. Texture of crumb and grain scores generally showed a decline in quality compared with earlier years.

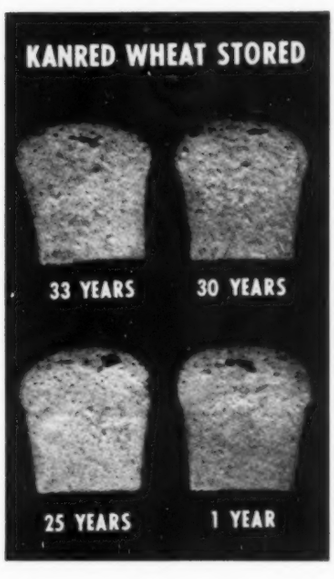
Storage had no consistent effect on protein content except that one-third of the samples showed a slight apparent loss, possibly due to sampling error. Thiamine values, too, were the same for the stored as for the freshly-harvested wheat.

Wheat's ability to germinate decreased progressively with age, but the rate of decrease was not the same for all samples. Kanred variety lost viability somewhat faster than Marquis. Practically all wheat was nonviable after 30 years but, nevertheless, continued to make good bread.

EDITOR'S NOTE: This report originally appeared in Agricultural Research, a publication of the U.S. Department of Agriculture.

There was a definite and fairly regular increase in fat acidity during storage, indicating a certain amount of progressive deterioration. This, however, was not as apparent in the baking tests as might be expected.

The findings were based on analysis for nitrogen and thiamine content and on baking tests of wheats and flour made from them. Samples of wheat were stored beginning with the 1921 crop, and tests were made periodically over the past 20 years. The researchers plan to make one more series of tests on the stored wheat, possibly in the early 1960's.



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A new addition to the Bi-Cap line is Bi-Cap Bolted Cornmeal Enrichment. Pfizer also continues to offer its Bi-Cap Degerminated Cornmeal Enrichment plus both single and double strength flour enrichment mixtures.

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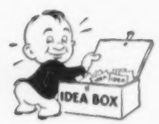
Worth Looking Into



New Products
New Services
New Literature

This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 2119—Timing Belt Drive

The Time-Tex timing belt drive constructed with steel cable cords imbedded in neoprene fully molded with nylon base fabric is described in a new bulletin released by Allis-Chalmers Manufacturing Co. The bulletin points out how this timing belt drive is suitable for a wide range of load applications—from subfractional to 600 h.p. with a torque load range from thousands of foot pounds down to light loads in inch ounces. Copies of the bulletin are available by checking No. 2119 on the coupon.

No. 2120—Flow Control Valves

The Syntron Co. has announced publication of a new catalog sheet on its "iris-type" flow control valves which, the firm said, provide easy, accurate flow control (and positive shutoff) of bulk materials from bins and chutes. The principal feature of the valve is a flexible diaphragm which opens and closes through continuously variable concentric apertures to provide easy volume flow control. Featuring one-hand operation, it can be locked in any position by the twist of the lever which varies the openings. For a copy of the catalog sheet check No. 2120 on the coupon.

No. 4278—Magnifier With Lab-Base

S. B. Logan & Co. has developed a new 5-power, wide field, non-distorting magnifier for a number of purposes, including laboratory work where clear, sharp magnification is necessary for quick application to thermometers, burettes, manometers and other calibrated apparatus. The main feature of the magnifier, which the firm has named "Precision Vision," is the new Logan Universal Lab-Base, which permits setting the 5X magnifier in any desired plane or angle for quick, positive focusing. The company claims an exclusive feature which permits easy removal of the magnifier from the weighted

Lab-Base, simplifying operations and making possible and practical many applications of magnification in combination with common shop and laboratory apparatus never before achieved. The unit is equipped also with a special friction sleeve which attaches to the magnifier by means of a special swivel clamp. The sleeve is designed to clamp to any 5/16-in. diameter rod, leaving the instrument free to rotate, but positive at any setting. For details, check No. 4278 on the coupon and mail to this publication.

No. 4292—Leasing For Small Businesses

A new study, "The Pros and Cons of Equipment Leasing for Smaller Manufacturers, Department Stores, and Supermarkets," has been published by the Foundation for Management Research. In the 16-page study there is a complete discussion of the cost of leasing compared with outright purchase and purchase through conditional sales contract. Complete cost charts are used to illustrate the material. The advantages and disadvantages of equipment leasing in specific business situations encountered by smaller enterprises are set out in detail. Single copies are available free of charge. Simply check No. 4292 on the coupon, clip and mail.

No. 2121—Meter Bulletin

A panel-mounted meter that indicates weighing deviations in terms of dial scale divisions is described in a technical reference bulletin offered by the Richardson Scale Co. The bulletin describes the meter, designed to be used with the Richardson "Select-O-Weigh" automatic proportioning system to provide a visual indication of the number of graduations of an "off weight" for each ingredient weighed by the system. A photograph of the indicator illustrates the bulletin. For a copy check No. 2121 on the coupon.

No. 2124—Stream Divider

A new and improved mill stream divider has been put on the market by the Beard Foundry & Machine Works. Alfred Sowden, for many years in charge of production for the New Era Milling Co., Arkansas City, Kansas, is president of the Beard firm, which is manufacturing the divider, and the machine incorporates Mr. Sowden's knowledge and experience as a miller in meeting the problem of accurate mill stream splitting. Known as the "Whirly-Splitter," the machine consists of a cast iron base

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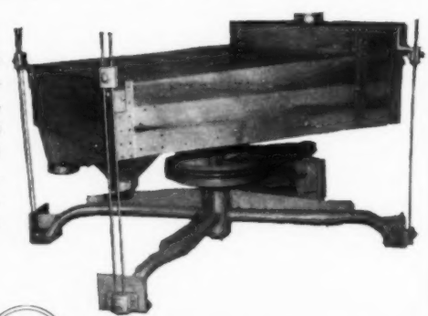

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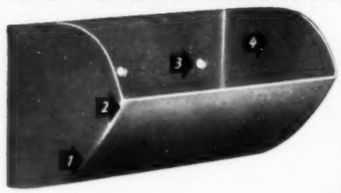

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CALUMET CUPS

and frame supporting a steel housing enclosing a bronze deflector mounted on a vertical shaft. Removable observation covers are installed in the top of the frame for easy inspection. The driving mechanism consists of shaft-mounted bevel gears supported by ball and roller bearings. The manufacturer says that fractional horsepower is adequate to insure satisfactory operation and may be provided by belt or motor. Mill stock entering the top central opening is distributed by the whirling impeller to several discharge openings. Four outlets are shown in the illustration, but additional outlets are available as desired. These openings are manually adjustable and provide accurate and dependable means of proportioning the stock delivery, the manufacturer reports. The manufacturer says the Whirly-Splitter assures better loading of bolting surface because it discharges a uniform proportion of coarse and fine material thus affording a higher percentage of flour extraction, a higher yield. For more information check No. 2124 on the coupon.

No. 2122 Booklet On Belting

L. H. Shingle Co. has published a 12-page booklet on nylon core belting. Titled "The Story of Nylon Core Belting," the booklet gives a summary of the facts about this type of flat transmission belting. The booklet begins with the inception of nylon core belting in wartime Germany and deals with its adoption throughout Europe and its introduction into America. Copies of the booklet are available by checking No. 2122 on the coupon.

No. 2123—New Lubricant

Keystone Lubricating Co. has announced the development of a new multi-purpose lubricant for use in all industries. Known as Keystone No. 88 multi-purpose lubricant, this product has application in 90% of all ball and roller bearing installations, the firm said. The lubricant has an operating temperature range of from 0 to 275° F. and a melting point of close to 400° F. It is made in six densities. Obtain more information by checking No. 2123 on the coupon.

No. 4282—Booklet On Enrichment

Merck & Co., Inc., has available a new publication, "Your Refresher Course on Enrichment," which millers, bakers, cereal manufacturers and others in the food field will find is a handy reference guide to regulations and suggestions for required dietary labeling of enriched foods. The booklet also outlines the federal standards of identity and dietary labeling for enriched foods in the center spread. Specific standards and labeling requirements for bread, flour, farina, corn meal and grits, rice, pastina and macaroni products are itemized in a ready reference table. For a copy of this booklet, check No. 4282 on the coupon, clip and mail to this publication.

No. 7454—Bin Level Indicator

An automatic bin level indicator, designed for applications where corrosion and chemical action may be factors, is announced by BinDicator Co. The "Auto-Bin-Dicator" body is made from heavy aluminum castings and the diaphragm is of stainless steel. The company says the controlled movement of the spring-loaded diaphragm and the sensitivity of the switch mechanism make the unit responsive to changes in pressure of materials, and it functions equally well controlling levels of light, low density materials as heavy, dense, coarse or abrasive materials. The unit can be affixed to thick or thin walled bins, or suspended within the bin. It can also be used in chutes and hoppers to prevent choke-ups, overfeeding and damage to machinery, the company says. For details about all models, which are listed by Underwriters' Laboratories, check No. 7454 on the coupon and mail to this publication.

No. 2125—Pneumatic Bulletin

The availability of a new technical bulletin describing positive pressure pneumatic conveying systems has been announced by Sprout, Waldron & Co., Inc. Illustrated in the booklet are the major components of the Sprout-Waldron Pneu-Flo system used in flour and feed mills.

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- Scheduled visits to your mill by Ferguson Fumigants Technician.
- Regular Insect Population Counts.
- Nominal Rental Plan. No initial cost for you.
- Continuous Service, Maintenance, Repair.
- Superior DAWSON® LOW DOSAGE FORMULA 73 SPOT FUMIGANT used exclusively.
- Minimum Shutdown — Minimum Exposure Periods. Two men in two hours can completely spot fumigate the average 4,000 cwt. capacity mill.

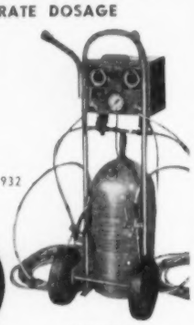
If you have NO FREIGHT ELEVATOR

"LITTLE SQUIRT"® BOX
U.S. Patent No. 2,876,932

AUTOMATICALLY MEASURES ACCURATE DOSAGE

If you have a FREIGHT ELEVATOR

"THE LITTLE SQUIRT"® Electric Portable
U.S. Pat. No. 2,876,932



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SAFE—Low dosage. Strong Warning Odor.

SURE—Effectively kills all stages of insect life.

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PACKAGED in 5 gal. cans and the handy 2 in. SHOT CAN for SMALLER MILL usage.

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Economical, effective, trouble-free spot fumigation is assured by our national reputation. We are the original developer of Dawson 73 Low Dosage Spot Fumigant (U.S. Patent No. 2,806,857). We serve a large percentage of the milling capacity in America today. Their own experience with our materials is a further assurance. Inquiries invited. We are a trained, experienced service organization dedicated to helping you get the best results at the most economical cost.

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FERGUSON FUMIGANTS
INCORPORATED
P. O. Box 5868
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These components include the positive displacement blower with intake filter, the blow-through airlock feeder, the airlock-manifold combination, the collector, and the conveyor piping to storage bins and processes. A special series of schematic drawings illustrates the various diverter valve types which are available. Included in this technical bulletin is chart designed to help determine the horsepower and line size required for systems ranging in capacity from 1,000 to 60,000 lb./hr. The information in the table is based on the handling of soft feed ingredients, powdery chemicals and foodstuffs not exceeding 50 lb. per cu. ft. bulk density. Copies are available by checking No. 2125 on the coupon.

No. 2127—Explosion-Proof Mill

To meet the needs of plants operating with pressure systems, or those processing explosive material, a new impact mill with extra heavy walls and other explosion-proof construction features has been developed. A special model of the Entoleter

series 27 CentriMil, it is designed to meet ASME code 1956 for unfired pressure vessels. The mill will retain an explosive force of 100 lb. per square inch of pressure, the manufacturer says. In addition a safety blow-out can be added to the hopper to permit specified pressure to be harmlessly dissipated. Most dusts are capable of exploding if the right mixture with air is achieved. While starting up or shutting down a mill the proportions of air to dust are continuously changing and will at one point pass through this critical stage. If a spark should be struck at that instant, an explosion would result. For that reason, when handling such substances the extra safety factor provided by the new mill's construction is of particular importance. For more information check No. 2127 on the coupon.

No. 2128—Industrial Cleaner

The availability of a motorless cleaner in three different models has been announced by the Vibro-Pneumatic Cleaner Co. The pick-a-back feeds into a nylon dust receiving bag carried on the back of the operator or, using a ten foot exhaust hose, the operator can hook the receiver over any handy object. The Castered Tank model feeds into a tank container that cleans and washes the suction air before exhausting it to the atmosphere. The Recovery model has the features of the Castered Tank model plus the dry recovery feature for reclaiming collected material for reuse. To obtain a brochure about the cleaner check No. 2128 on the coupon.

No. 2126—Remote Weight Recording

The latest accomplishments in the field of transmitting and processing of weight data are described in a

One of a battery of new Toledo Model 9460 Automatic Checkweighers for bags and cartons in operation at A. E. Staley Manufacturing Company, Decatur, Illinois.

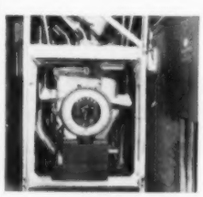
100% In-line Checkweighing...

Items from 50 to 200 lbs. ... up to 40 per minute!

Now—eliminate slow, costly, manual checkweighing of bags, cartons, packages, parts and pieces. Save time, labor and material. Assure consistent weights and maintain customer goodwill.

Compact, dependable and accurate to one part in 3000, this new Toledo with continuous-running motorized conveyor on the weigh section fits readily into conveyor lines. Available with remote zone indication stations for continuous visual check, magnetic counters to accumulate operating data and many more important Toledo features.

Let us show you what the new 9460 Checkweigher can do for you. Write today for Bulletin 2968. TOLEDO SCALE, Division of Toledo Scale Corporation, Toledo 12, Ohio.



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Get accurate net weight listing and totaling of bulk materials going into truck or carload shipments. Weighing is automatic. You save time, control costs and reduce claims. The Toledo control console may be remotely located for operating convenience. All installations of the system to date have been certified by authorized agencies. Ask for Bulletin 2490.

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Specialized for Your Industry

Belt Clinch No. 2 (liquid) and Bar Belt Dressing No. 3.

These dressings are preferred by 75% of our flour mill customers.

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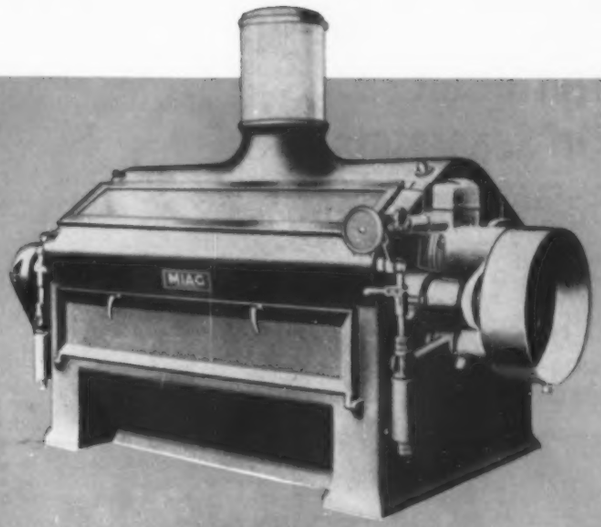
Roller mills type HN with hydraulic on-off control system operated from feed inlet assure protection of roll surface and corrugation and more uniform mill operation



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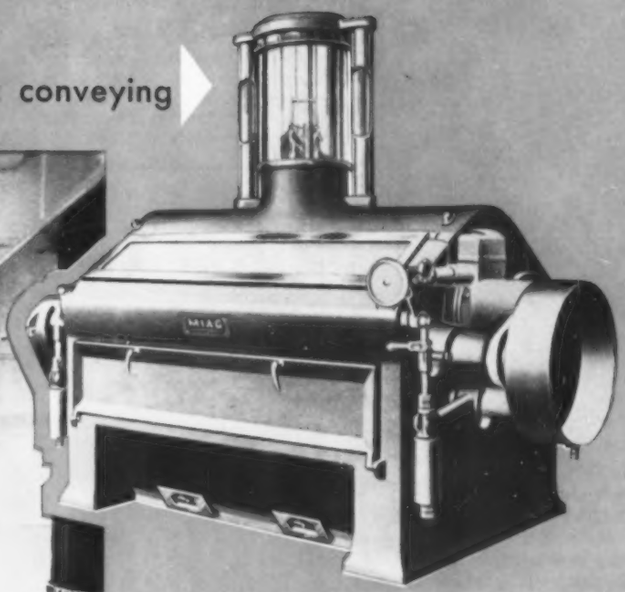

Roller floor of a 4500 mill with MIAG roller mills type HN

Design and construction of complete flour mill and grain storage plants including all mechanical and pneumatic handling systems for grain unloading, cleaning house, mill and warehouse

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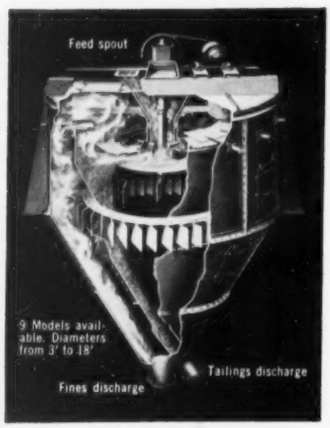
40 to 400 Mesh Selection Range Provides Versatility Impossible with Conventional Sifters



In 40 years of use in a variety of industries, more than 2000 Sturtevant Air Separators have classified particles finer than sifters can economically do. Further, with Sturtevants, either a superfine or a coarse product can be selected. Low power and maintenance, plus small plant space mean additional efficiency for milling systems.

The precise selection of Sturtevant Air Separators is based on the exact control of air currents and centrifugal force. Simple adjustments create counter-action between the two that allows selection of almost any desired particle size — in either upper or lower ranges.

Pioneers in air separation, Sturtevant engineers may be able to help you upgrade your milling system while lowering production costs. Write today, describing your requirements.

Send for Air Separator Bulletin No. 087.

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Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators

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CHASE BAGS
There's None Better!

new eight-page Toledo Scale Corp. brochure. It is pointed out how these new Toledo units bridge the gap between the accurate indication on the dial and the use of the weight data at accounting control points by automatic weight data transmission. Systems described and illustrated include those using the direct digital scanner which electronically transmits a continuous signal of weight being applied to the scale and also the direct digital selector which is an electromechanical device that sends an electrical signal when the scale indicator reaches the accurate weight indication. These transmitted weights are recorded and processed on adding machines, typewriters, tape punch or card punch units or indicated in illuminated numerical form. For complete information check No. 2126 on the coupon.

No. 4283—Dry-Flo Bulk Rail Car

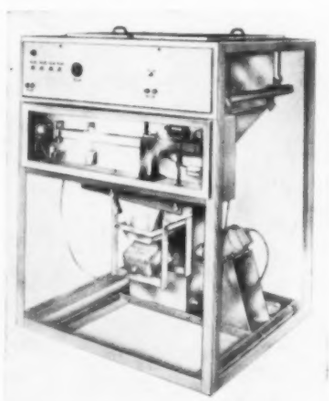
General American Transportation Corp. has developed a covered hopper railroad car for bulk transportation of dry materials wh ch, reportedly, is competitive costwise with other covered hopper cars. The Dry-Flo car is capable of handling a wide range of products, including high grade commodities where freedom from contamination is necessary. General American claims, as advantages for its car, an exclusively designed unloading gate and more rail clearance than other hopper cars. Also, the Dry-Flo's unloading gate is located entirely within the car, eliminating pickup of foreign materials and preventing trouble with exterior gates. For details, check No. 4283, clip the coupon and mail.

No. 7451—Temperature System

Rolfes Electronics Corp., division of Rolfes Grain Aeration Companies, is now marketing its "ARO" (automatic digital read-out) temperature scanning system. The unit, according to company literature, is capable of reading 1,250 temperature cables with 18 sensing points on each cable, yet is compact enough to require only a small space. The compactness, the company says, is accomplished through the use of "digital indicated lights" which are automatically projected onto a rectangular screen showing the exact location of the bin and sensing point being read. A "scan-control-knob" enables the operator to slow down or speed-up the automatic readings to fit his needs, and can be converted to a manually operated system, the company says. Check No. 7451 on the coupon and mail for details.

No. 7441—Weigh-Feeder Machine

A weigh-feeder machine designed for electronically controlled feeding of dry chemicals and other bulk materials in water, chemicals and other industrial processing operations is announced by Syntron Co. The unit provides continuous volume feeding at any rate between 3 and 300 lb. an hour, the company says. In operation, the company stated, a weighed batch of material is loaded into the machine's 9 cu. ft. stainless steel hopper which is mounted on a beam-type hopper scale. Control mechanisms on the scale beam are set for the desired rate of feed. An electromagnetic vibrator on the hopper keeps the materials free-flowing and insures dependable supply to the feeder, the company says. The complete unit is contained in a dust-tight sheet metal cabinet. Check No. 7441 on the coupon and mail for details.



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District 4, AOM, Northwest AACC Meet Jointly

MINNEAPOLIS — District No. 4, Association of Operative Millers, and the Northwest Section of the American Association of Cereal Chemists got together for a joint meeting at the regularly scheduled spring meeting of the AOM district. Both groups agreed the joint meeting was a good idea.

In fact, both groups liked the idea of meeting jointly so much, there was talk during the luncheon session of making the joint meeting an annual affair. More definite action on this proposal will be taken by the two groups at a later date.

Credit for organizing the joint meeting was given to Marvin Shaw, Bay State Milling Co., Winona, Minn., new chairman of District 4. Mr. Shaw was assisted in presiding at the meeting by Harry G. Obermeyer, General Mills, Inc., chairman of the Northwest Section. The program chairmen were George Tooker, Commander-Larabee Milling Co., for District 4 and Robert J. Pickenpack, GMI, for the Northwest Section.

A suggestion for another joint meeting was made during the morning session. E. H. Leitte of the E. H. Leitte Co. proposed that District 4 have a joint meeting with District No. 13, AOM, at the Royal Alexandra Hotel in Winnipeg, Man., Nov. 13-14. Discussion of this proposal was postponed until the summer meeting of District 4 in August.

One of the high points of the meeting occurred when C. G. Harrel, who retired April 1 as director of the new product ideas department of the Pillsbury Co. and who is now an independent consultant, showed motion pictures that were taken at Northwest Section picnics 20 years ago. Mr. Harrel, who is known as "Doc" to his friends and associates, used a "then and now" technique in showing the films. Whenever an AACC member present was identified in the films, he was called forward for the two groups to compare him now and as he appeared in the film then.

Mr. Harrel also predicted that a team of chemists and operative millers will revolutionize the milling industry in the next 10 years, but he did not elaborate on his statement.

Speakers included C. A. Naffziger, Chicago, director of the freight loss and damage prevention section of the Association of American Railroads, who discussed how freight cars should be prepared for flour loading. Stephen J. Loska, Jr., Pillsbury, Minneapolis, reported on current developments in the wheat flour industry from the viewpoint of air classification. He used slides to illustrate his report.

Dr. Paul E. Ramstad, GMI, told about the protein quality in wheat. Dr. H. H. Schopmeyer, International Milling Co., Minneapolis, chairman of the technical committee of the Millers National Federation, reported on the activities of his group. O. A. Oudal, GMI, Minneapolis, chairman of the MNF committee on weights and measures, discussed flour package weight and urged that weight checking programs be accurate and adequate.

F. Neil Leishman

D. J. Dowd

DAY APPOINTMENTS — F. Neil Leishman has been appointed district manager of the Day Sales Co. office at Kansas City. In his new position he will handle Day sales in Kansas, northern Oklahoma, Nebraska, southern Iowa and the western half of Missouri. Mr. Leishman is a veteran application engineer in the field of dust control and bulk material handling. D. J. Dowd has been appointed district manager for Day in the Chicago area. He formerly was in the engineering department in Minneapolis. Mr. Dowd will handle sales in northern Illinois, northern Indiana, southern Wisconsin and eastern Iowa.

FIRE PREVENTION
IS SIMPLE AS . . .
A B C
"LOOK AROUND THE PLANT BEFORE
YOU TURN THE KEY AND LOCK THE DOOR"
IF YOU FOLLOW THIS WISE WARNING
THERE'LL BE WORK FOR ALL NEXT MORNING
IF YOU SMELL OR SEE OR HEAR
SOMETHING DIFFERENT, SOMETHING QUEER
AND CAN'T FIX IT ON THE SPOT
JUST DON'T LET IT BE FORGOT
HERE YOU HAVE THE LOWLY BROOM
PUSHED BY — NEVER YOU MIND WHOM
IF HE GOES IN VIGOROUS STYLE
UP AND BACK DOWN EVERY AISLE
ONLY STOPPING AS HE TURNS
TO SAY, "A CLEAN PLANT SELDOM BURNS!"
"It is awfully hard for a plant to burn
that is kept up and kept clean by careful men"
Mill Mutual Fire Prevention Bureau, 400 W. Madison St., Chicago 6, Ill.
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For All Roll Corrugating
Economical Increased Output
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If Your Lab Is Overloaded
Sanitation Analyses - Wheat and Flour
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. . and here is how and why you can make such tremendous savings with it!

MATERIAL SAVINGS
8¢ GLUE TAPE SAVINGS OVER 8¢ OF SEALING COSTS LESS THAN 2¢. ASTS WITH OUT-TAPE. EXAMPLE: AVERAGE SIZE BALES PUT OF 2,400 AVG CAN . . . PER 8 HOUR DAY CAN . . .
SAVE EACH DAY IN MATERIAL ALONE $18.00 OR ANNUAL SAVINGS OF $5,616.00

LABOR SAVING
100% OR MORE OVER HAND-SEALING WHERE NORMAL 2 TO 3 MEN PER MACHINE IS USED. PACKAGING 4 MAN-HOURS IS CUT TO 1 MAN.
AVERAGE MINIMUM ANNUAL LABOR SAVINGS $5,200.00

MINIMUM SAVINGS (COMPUTED ON 2,400 BALES IN AN 8 HOUR DAY WEEK) AMOUNT TO $10,816.00 PER YEAR

Tol-O-Matic, Inc. 246 Tenth Avenue So. Minneapolis 15, Minn.

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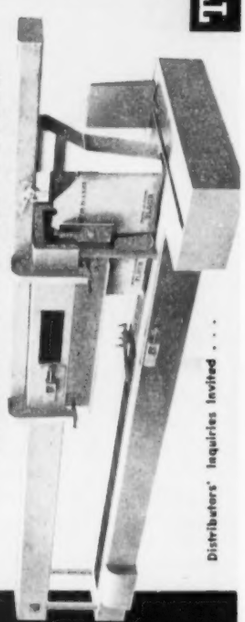

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How To Save 100% OR MORE On Sealing BALER BAGS

Corn Refiners Sponsor Collective Research

THE U.S. corn refining industry has entered its 25th year of cooperative research, undertaken via grants by the Corn Industries Research Foundation, Inc., to universities, government laboratories and private science centers as a supplement to research activities by the industry's individual companies.

This collective effort is described by William T. Brady, CIRF president, who is also president of Corn Products Co., as a "long range, continuing quest for new information about the structure, chemistry and performance characteristics of ingredients of the corn kernel."

J. T. Goodwin, Jr.

At a time when the importance of industrial utilization of agricultural commodities is being emphasized, the foundation program gives the corn wet-millers substantial headway in the broad investigatory activity required to create new products from corn, or new applications for present products, it was explained.

Projects supported by foundation grants must meet certain criteria. They must be concerned with products, processes or raw materials common to all members of the industry; they may not interfere with competitive activities of members, and, in general, they should promise benefits not only to the industry's members but to its customers, its suppliers of corn, and the public.

Starch samples are tested in the laboratory of a corn refining plant by use of the Corn Industries Research Foundation viscometer, an instrument which evolved from the industry's collective research program.

Dr. John T. Goodwin, Jr., CIRF technical director, points out that the all-industry committee of company

the exclusive
FLEX-A-FOAM
DUST MASK
(no other product like it . . . anywhere)

Here's everything that management and worker alike could possibly want in a dust respirator!

1. Form-fitting design: Self-adjusting to any size and shape of face without pressure or irritating discomfort.
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6. Simplicity and economy: Only 4 tough, long-wearing inter-locking parts — all washable. Pure latex filter outwears throw-away type more than 100 to 1.

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scientists responsible for allocating the grants recognizes one paramount obligation—to find the researchers best qualified for the task wherever they may be. This year's grants, aggregating $121,000 and bringing the total over the years to considerably more than $2 million, are indicative of the wide range of investigations in carbohydrate chemistry made possible by the program.

Prof. Benjamin Carroll of Rutgers University will supervise studies of the binding of small ions and molecules by starch, concentrating attention on polarimetry, dye absorption and thermogravimetry.

At Washington University, St. Louis, Dr. Carl F. Cori will investigate enzymic synthesis of starch and molecular weight determinations of starch fractions, while Dr. John C. Sowden is observing reactions of certain starch forms by use of radioactive tracers. Prof. Myer M. Fishman of the City College of New York is studying the precipitability of starch in the presence of salt and alcohol.

Three grants were made to Purdue University: Prof. J. F. Foster is studying water dispersion of starch forms; Prof. Roy L. Whistler will explore starch granule reactions; and Prof. H. H. Kramer is continuing corn genetic studies. Under a research contract, Shuman Laboratories of Lafayette, Ind., is making analytical studies in connection with the Kramer project.

Prof. Dexter French, Iowa State College, will direct research programs of graduate students in the chemistry and structure of corn starch with relation to its polymeric properties.

"Bacterial Synthesis of Polysaccharides" is the subject of work by Dr. Edward J. Hehre of the Albert Einstein School of Medicine, New York.

Miss Edna M. Montgomery and associates at the Peoria, Ill., laboratories of the U.S. Department of Agriculture's Northern Utilization Research and Development Division are investigating physical-chemical properties of starch, with emphasis on solution characteristics of amylose and amylopectin derived from high-amylose corn.

At the University of Illinois, Prof. Elizabeth M. Osman is observing the behavior of starches and starch derivatives in food products. Prof. A. I. Nelson has begun work in the field of protective carbohydrate coatings for foods.

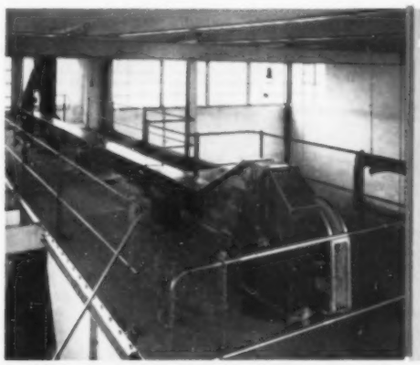
Motion photomicrographic studies of the "non-starch skeleton" of the starch granule are under the direction of Prof. R. M. Sandstedt at the University of Nebraska.

A project at the University of Minnesota, in charge of Prof. Fred Smith, involves the structure and utilization of starch, with special attention on the behavioral characteristics of dextrin, a starch derivative resulting from modification of starch by heat or other factors.

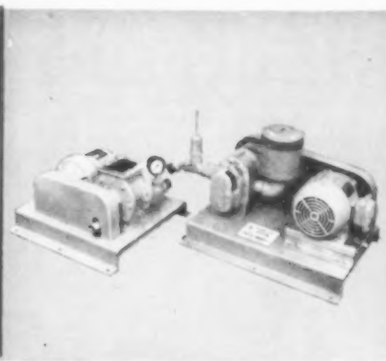
The mechanism of dextrin as it relates to branched chain structures of starch is the subject of work by Prof. M. L. Wolfrom, Ohio State University. Dr. Wolfrom's participation in the CIRF program dates from 1945.

Under a research contract between the foundation and the Institute of Research at Lehigh University, Profs. A. C. Zettlemoyer and R. R. Myers will supervise studies of the flow properties of starch pastes under varying conditions of stress and usage. The project is reported to have significance for such heavy industrial users of starch as textile and paper manufacturers.

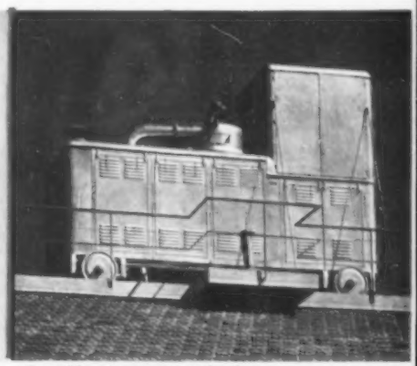
At the University of Missouri, Dr. Mark S. Zuber is growing exotic varieties of corn and examining them for their content of amylose, a straight-chain starch form believed to



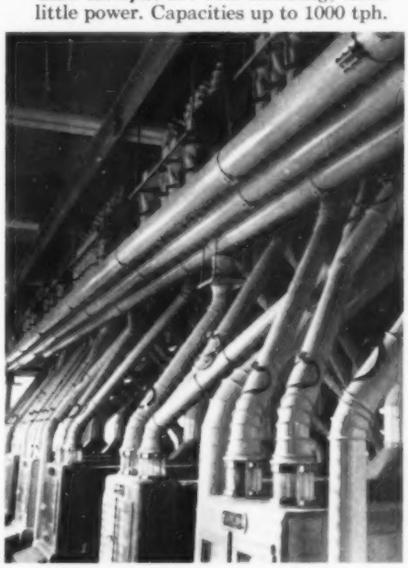
Chain Conveyors are self-cleaning, need little power. Capacities up to 1000 tph.



Fluid Lift Conveyor Systems with capacities up to 200,000 pounds per hour. Solids-to-air ratios are as high as 250:1.



Portable Pneumatic Unloader for box cars and flat storage. Capacities to 120 tph.



Vibrating Conveyor Tubes require little power and are completely self-cleaning.

Efficient Materials Handling

Shown here is some of the modern BUHLER-designed and BUHLER-built equipment which is enabling mills and bakeries to handle their bulk materials more economically than ever before possible.

Your nearby factory-trained BUHLER Man will be glad to visit you and recommend the most efficient system for your needs. Service and delivery is prompt . . . and you will be pleased with the savings which result.

Pneumatic Ship Unloader offers great flexibility. Capacities up to 220 tph.

Horizontal Storage Bins (above) with **Bin Dischargers** (below) use series of chains for discharge. No bridging; self-cleaning. They are available in a wide variety of sizes to fit the space which you have.

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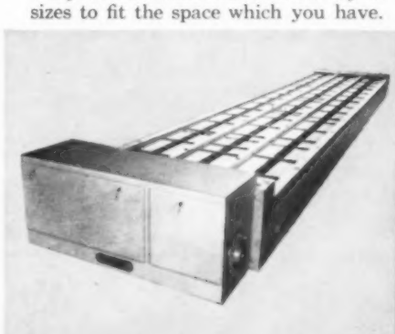
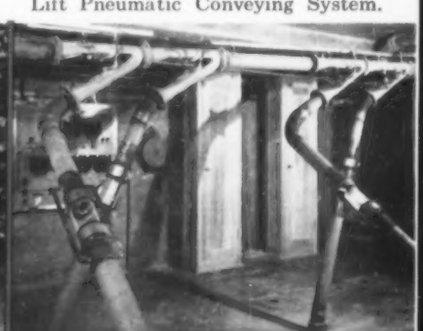
Multiple Line Suction Pneumatic. (Above) Low initial cost, sanitary, self-cleaning.

Line Switches with **Pneumatic Control Panel** regulate the flow of materials in Fluid Lift Pneumatic Conveying System.





have potentials for new-product development.

The industry committee which administers the grants program sponsors the starch round table, held annually in the fall so that company research officials and scientists working under the grants may meet informally to review progress, exchange information and project future research. Interest in this event has increased to such a degree that attendance is limited to an invitation-only basis.

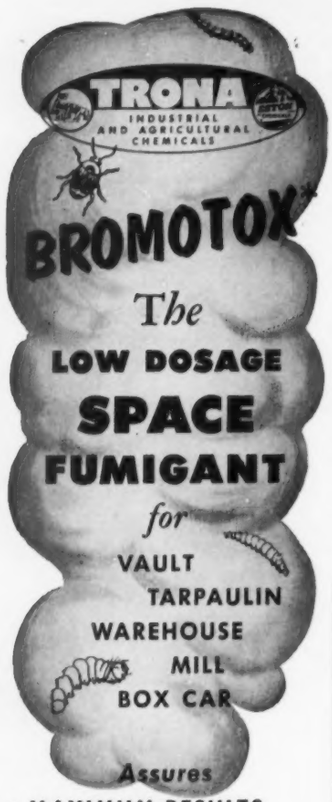
Members of the CIRF technical advisory committee include James W. Evans, American Maize-Products Co.; B. L. Scallet, Anheuser-Busch, Inc.; George T. Peckham, Jr., Clinton Corn Processing Co.; A. L. Elder, Corn Products Co.; John M. Seitz, the Hubinger Co.; R. E. Chaddock, Huron Milling Division of Hercules Powder Co.; A. L. High, Keever Starch Co.; Carlyle G. Caldwell, National Starch Products, Inc.; Carl C. Kesler, Penick & Ford, Ltd., Inc.; Thomas L. Gresham, A. E. Staley Manufacturing Co., and Ronald E. Pyle, Union Starch & Refining Co.

Mrs. Tibor Rozsa: "I don't mind so much that he makes me use flour sacks for pillow cases, but he won't let me take the flour out of them!"

Record Spending

NEW YORK — Corn Products Co. will spend $28 million for world wide expansion, modernization and replacement of facilities in 1959—an all-time high for the company, William T. Brady, president, told stockholders at the company's first annual meeting since its merger with Best Foods last fall. "This will give you some idea," he said, "of the confidence we place in the future."

Reporting on the results to date of the Best Foods merger, Mr. Brady, whose company chalked up $650 million in sales last year, told a record stockholder gathering in the Statler Hotel here that "everything we had thought possible about the advantages of this merger has been confirmed."



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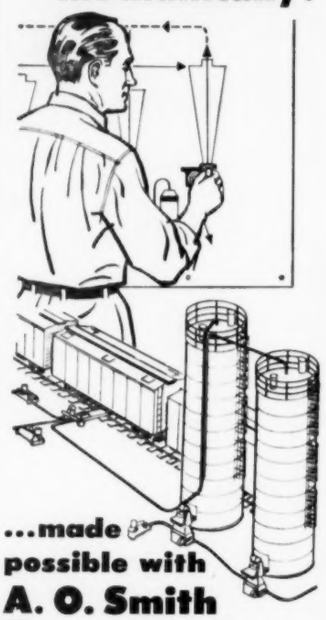

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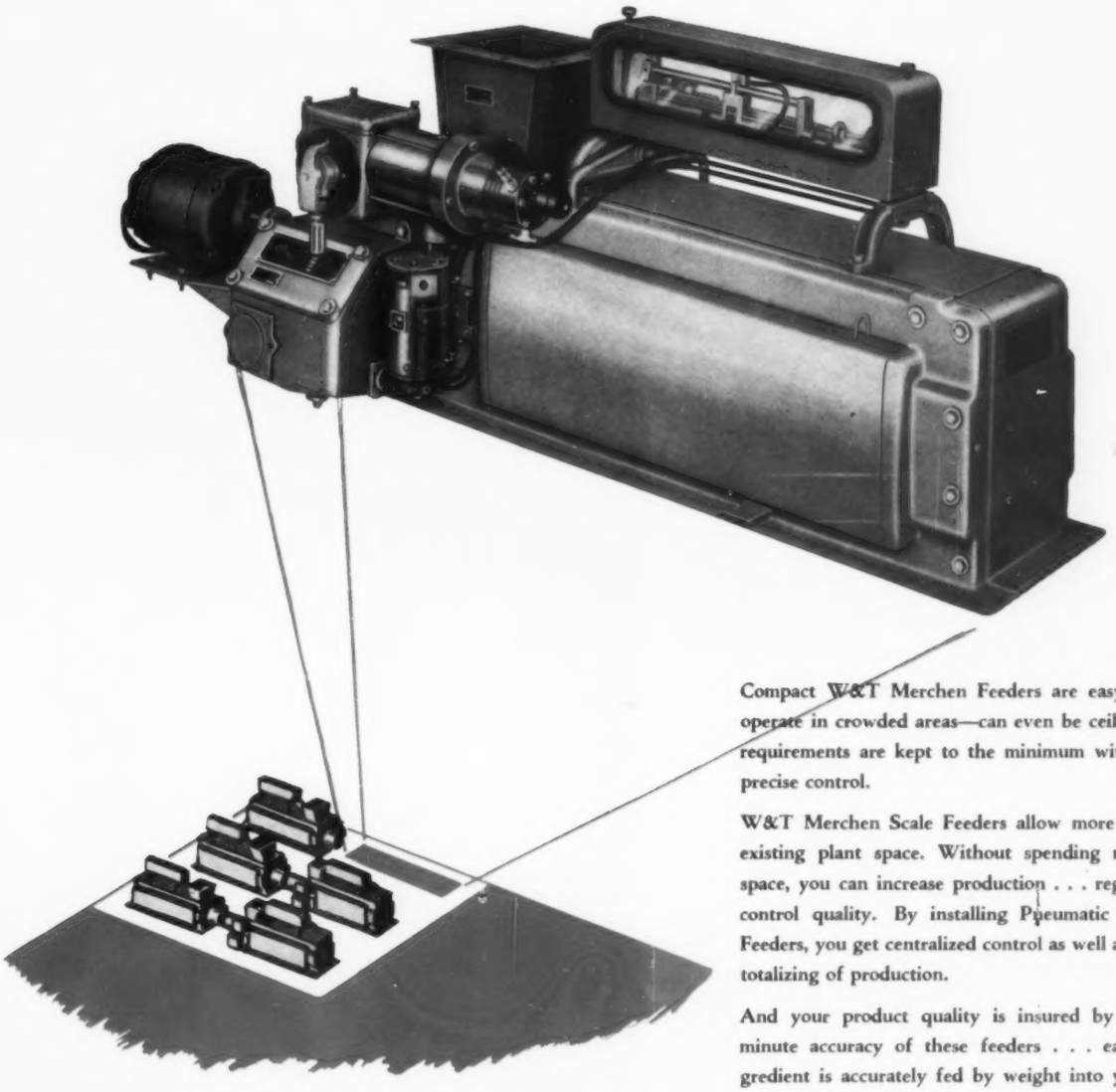

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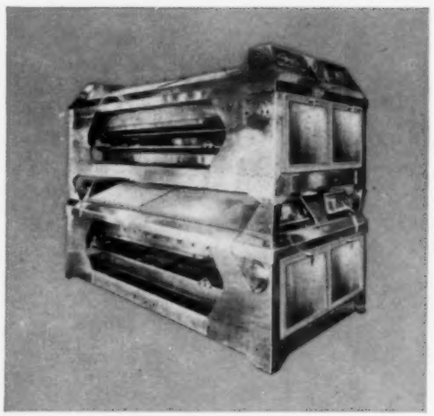

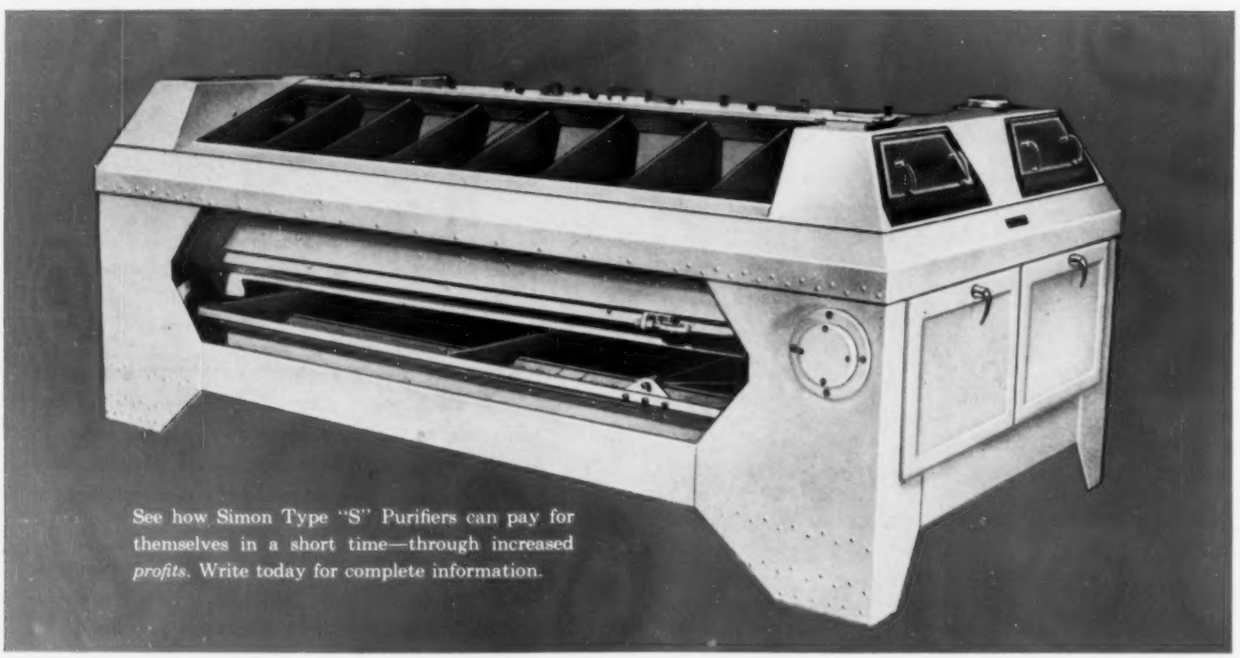

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